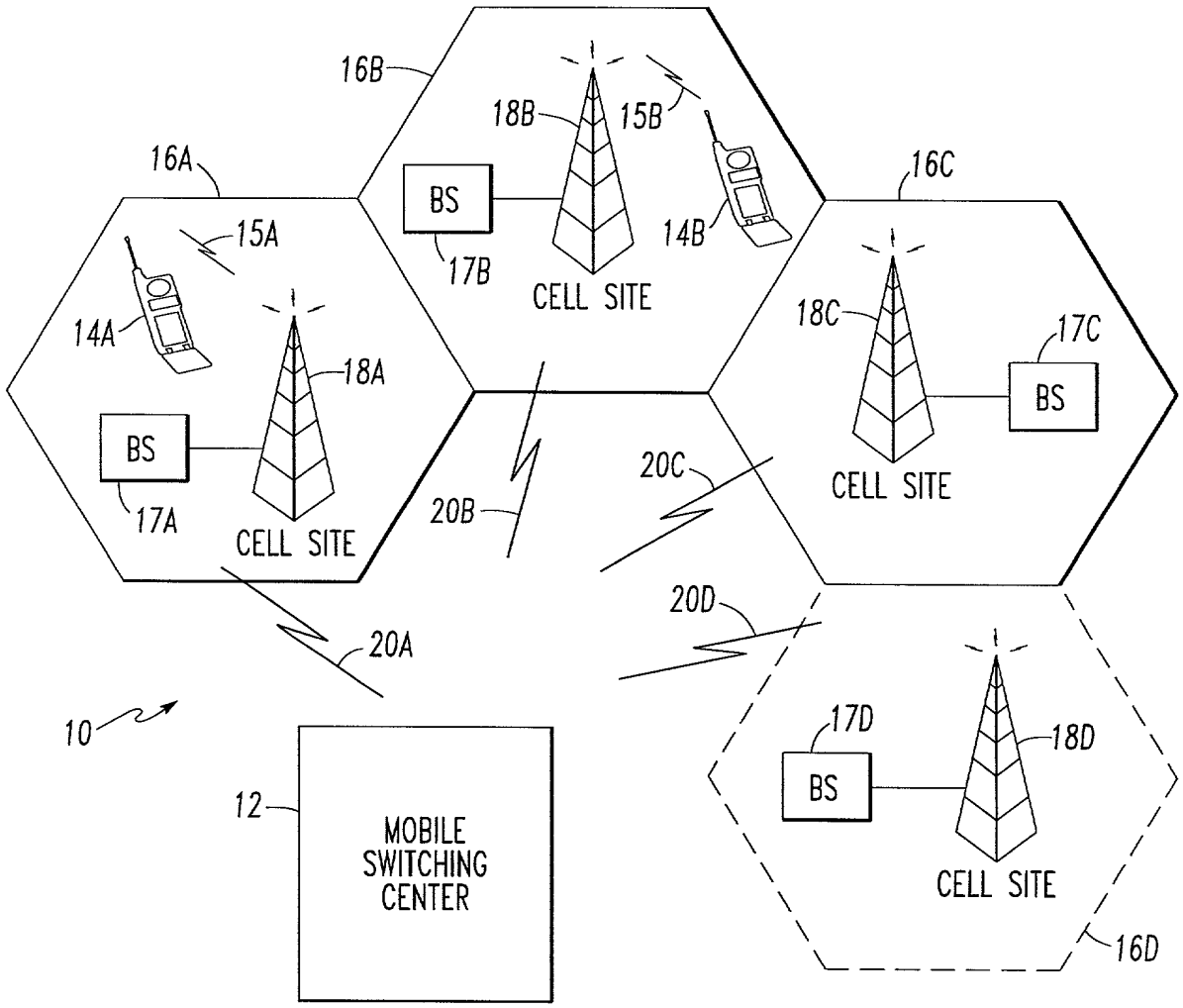

16B
18B
15B
16A
BS
16C
15A
14B
17B
CELL SITE
14A
18C
17C
18A
BS
BS
20C
17A
CELL SITE
20B
CELL SITE
20D
20A
10
17D
18D
12
MOBILE
SWITCHING
CENTER
BS
CELL SITE
16D

FIG. 1

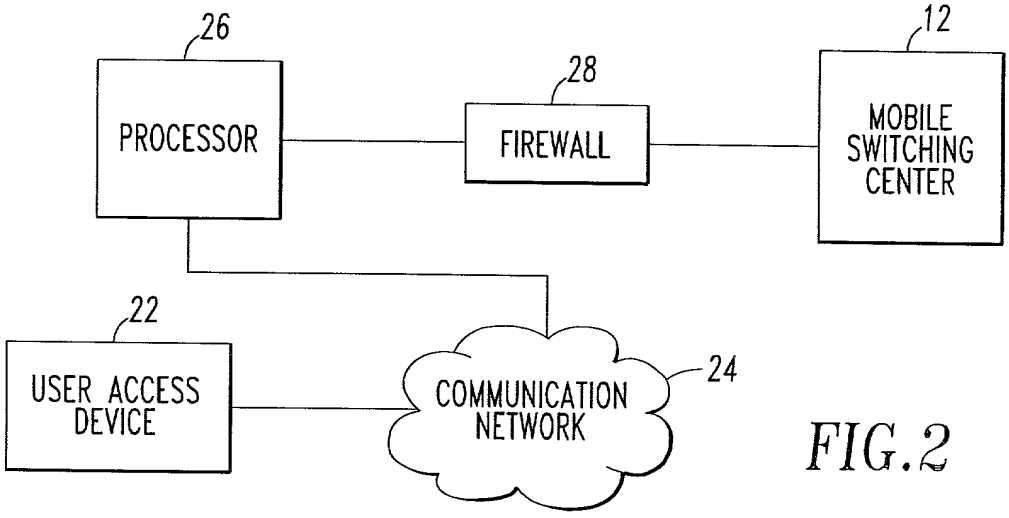

26
PROCESSOR
28
FIREWALL
12
MOBILE SWITCHING CENTER
22
USER ACCESS DEVICE
COMMUNICATION NETWORK
24

FIG.2

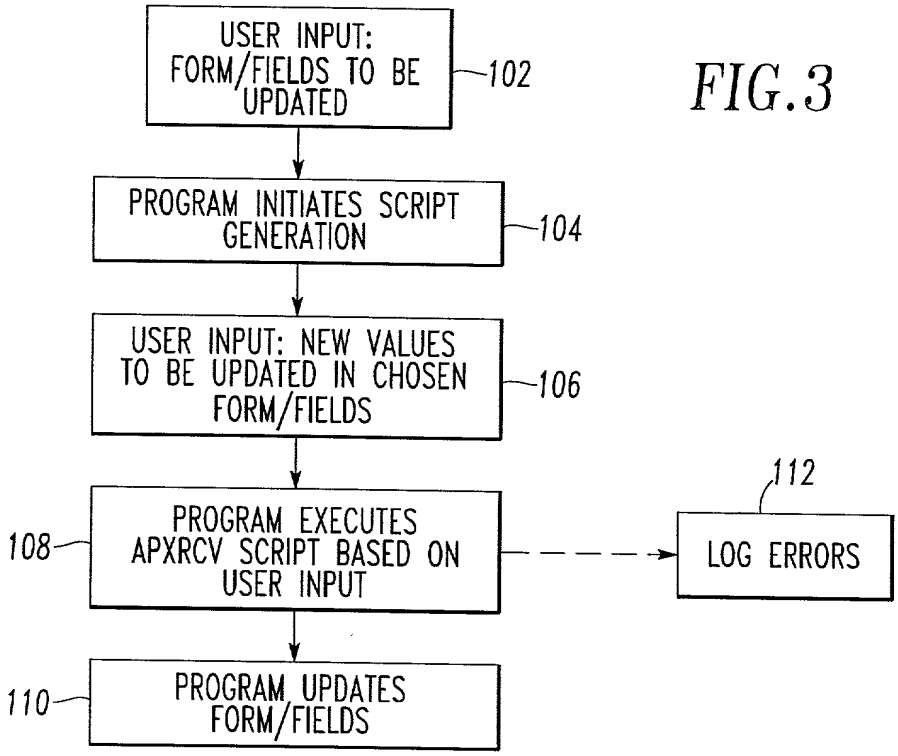

USER INPUT: FORM/FIELDS TO BE UPDATED
102
PROGRAM INITIATES SCRIPT GENERATION
104
USER INPUT: NEW VALUES TO BE UPDATED IN CHOSEN FORM/FIELDS
106
PROGRAM EXECUTES APXRCV SCRIPT BASED ON USER INPUT
108
112
LOG ERRORS
PROGRAM UPDATES FORM/FIELDS
110

FIG.3

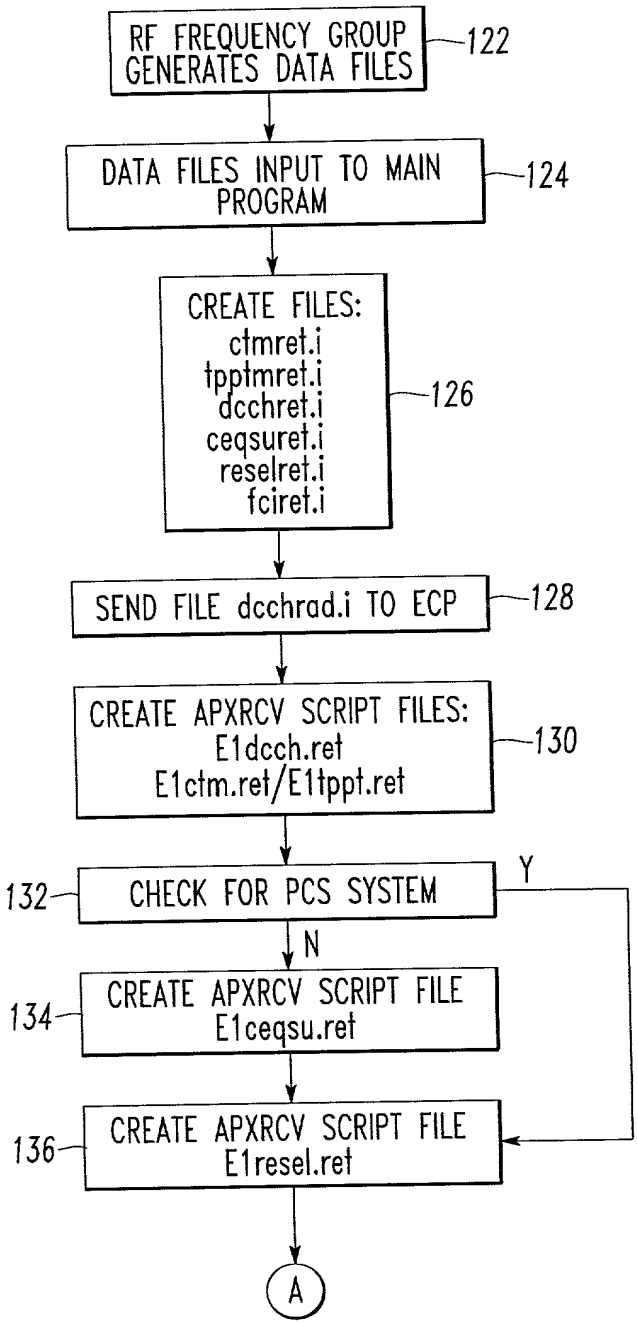

RF FREQUENCY GROUP GENERATES DATA FILES
122
DATA FILES INPUT TO MAIN PROGRAM
124
CREATE FILES:
ctmret.i
tpptmret.i
dcchret.i
ceqsuret.i
reselret.i
fciret.i
126
SEND FILE dcchrad.i TO ECP
128
CREATE APXRCV SCRIPT FILES:
E1dcch.ret
E1ctm.ret/E1tppt.ret
130
132
CHECK FOR PCS SYSTEM
Y
N
134
CREATE APXRCV SCRIPT FILE
E1ceqsu.ret
136
CREATE APXRCV SCRIPT FILE
E1resel.ret
A

FIG.4A

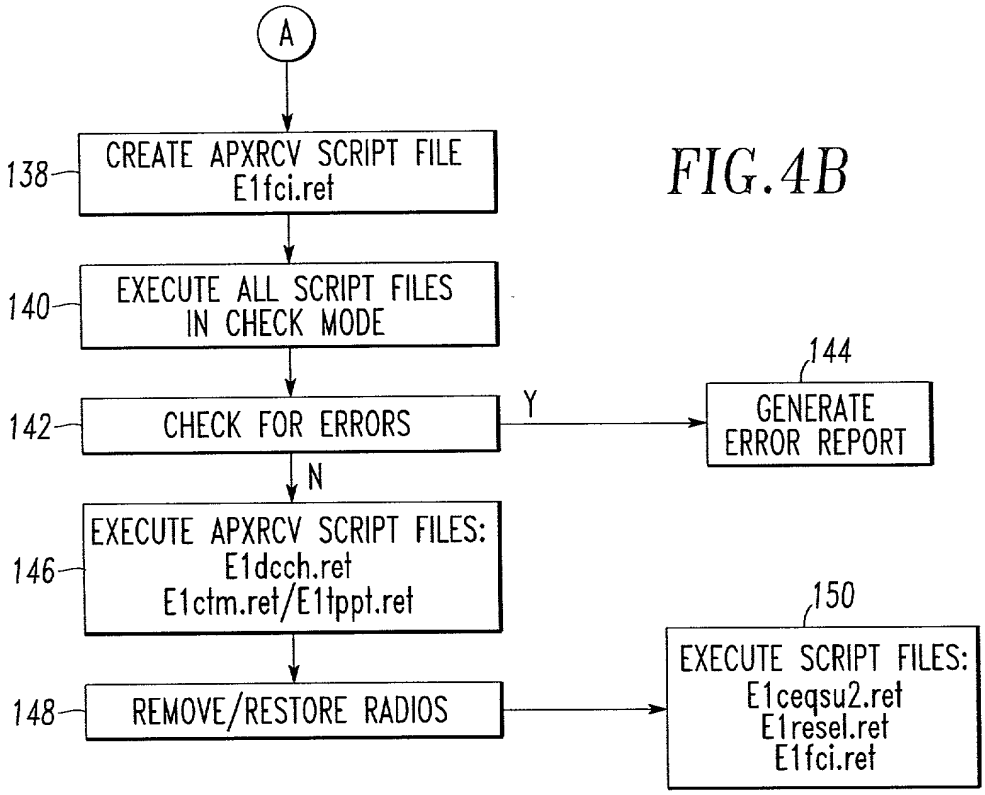

A
138
CREATE APXRCV SCRIPT FILE
E1fci.ret
140
EXECUTE ALL SCRIPT FILES
IN CHECK MODE
142
CHECK FOR ERRORS
Y
144
GENERATE
ERROR REPORT
N
146
EXECUTE APXRCV SCRIPT FILES:
E1dcch.ret
E1ctm.ret/E1tppt.ret
148
REMOVE/RESTORE RADIOS
150
EXECUTE SCRIPT FILES:
E1ceqsu2.ret
E1resel.ret
E1fci.ret

FIG.4B

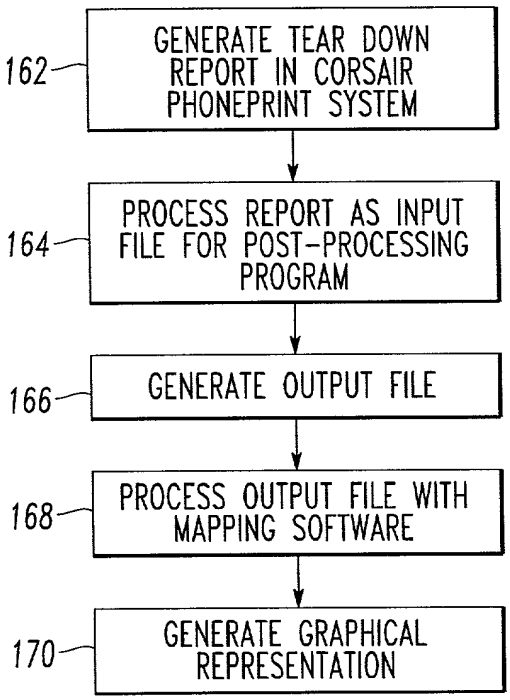

162
GENERATE TEAR DOWN
REPORT IN CORSAIR
PHONEPRINT SYSTEM
164
PROCESS REPORT AS INPUT
FILE FOR POST-PROCESSING
PROGRAM
166
GENERATE OUTPUT FILE
168
PROCESS OUTPUT FILE WITH
MAPPING SOFTWARE
170
GENERATE GRAPHICAL
REPRESENTATION

FIG.5

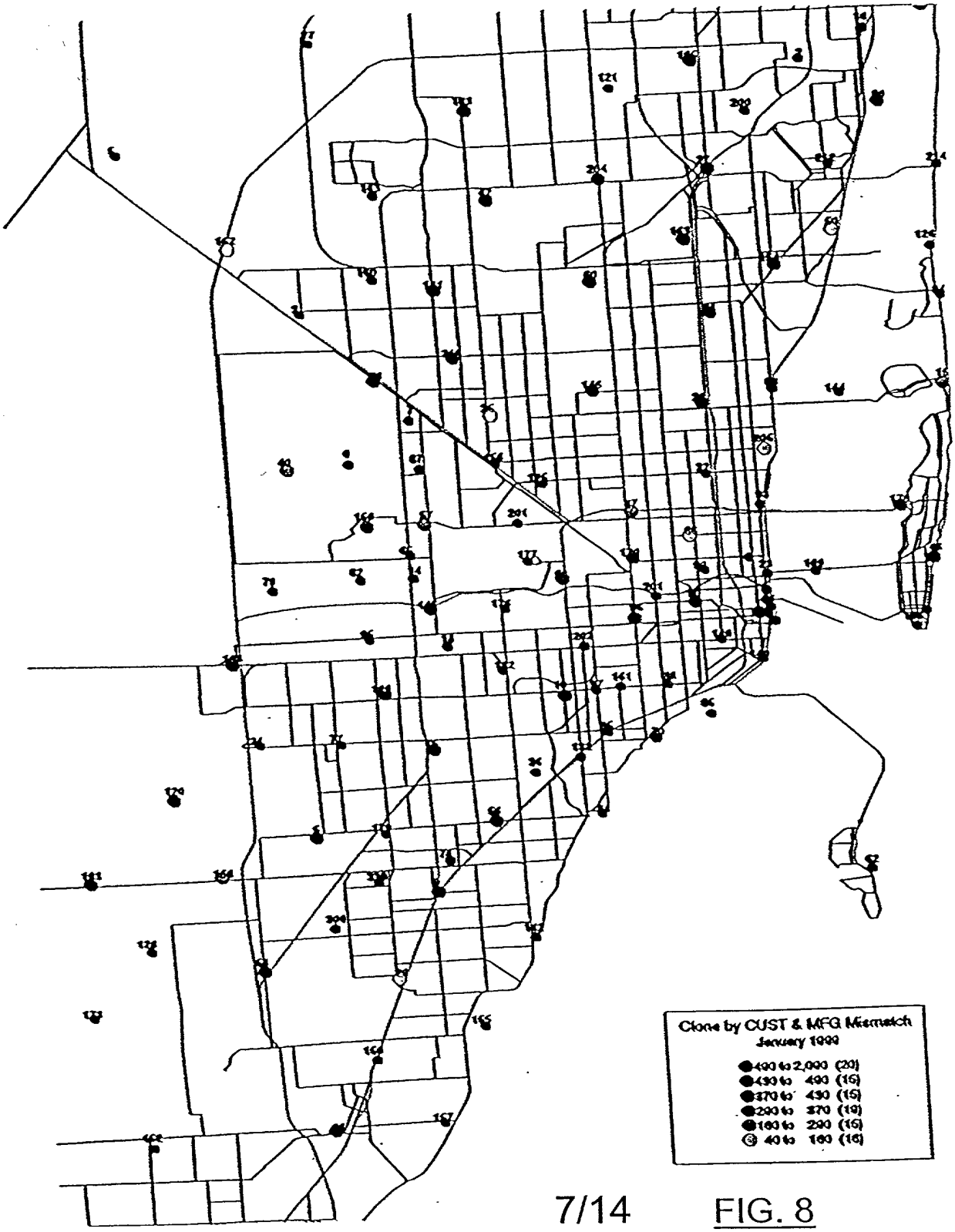
```
>pg pp9912.txt
Date      Time(2)  Site_ID  MIN(1)  Dialed_Digits  Tear-Down_Reason
12/25/99  19:26:09  20      2012075854   12014981322  MFG
12/23/99  14:56:20  219     2012075854   5617767114   MFG
12/26/99  21:40:32  167     2012130072   19547814445  MFG
12/23/99  19:06:49  82      2012134416   9544289147   MFG
12/23/99  19:06:23  82      2012134416   9544289147   MFG
12/25/99  17:23:55  82      2012134416   9544285083   MFG
12/25/99  15:06:20  82      2012134416   2015680907   MFG
12/25/99  13:04:16  82      2012134416   2015680907   MFG
12/25/99  13:04:05  82      2012134416   2015680907   MFG
12/25/99  13:03:53  82      2012134416   2015680907   MFG
12/25/99  13:03:31  82      2012134416   2015680907   MFG
12/25/99  13:01:49  82      2012134416   2015680907   MFG
12/25/99  12:53:38  82      2012134416   2015680907   MFG
12/25/99  12:52:32  82      2012134416   2015680907   MFG
12/25/99  12:52:03  82      2012134416   2015680907   MFG
12/25/99  12:50:48  82      2012134416   2015680907   MFG
12/25/99  12:48:15  82      2012134416   2015680907   MFG
12/25/99  12:47:16  82      2012134416   5680907 MFG
12/24/99  11:58:50  82      2012134416   8003328463   MFG
12/24/99  11:58:08  82      2012134416   8003328463   MFG
12/24/99  10:03:16  82      2012134416   9544289147   MFG
12/22/99  14:58:09  80      2012300764   19546467166  MFG
12/29/99  10:54:28  177     2012499657   19086881800  MFG
12/29/99  10:51:49  177     2012499657   9412503698   MFG
12/29/99  10:25:04  145     2012499657   12012400657  MFG
12/29/99  10:24:42  145     2012499657   12012400657  MFG
12/27/99  21:26:01  49      2012476225   15616551115  MFG
12/24/99  19:22:48  219     2012476225   15615551212  MFG
12/24/99  19:22:26  219     2012476225   15615551212  MFG
12/24/99  19:22:06  219     2012476225   15615551212  MFG
12/24/99  19:13:38  219     2012476225   5617950022   MFG
12/27/99  12:01:06  20      2012476225   15614996976  MFG
12/23/99  16:23:47  12      2012640686   3105152822   MFG
12/23/99  16:17:19  12      2012640686   3105152822   MFG
12/23/99  16:17:03  12      2012640686   3105152822   MFG
```

FIG.6

09/564,809 - 04/26/00

```
>pg map1299
ECP, CellNo,Longitude, Latitude,Count
4,1,-80.1675,26.155278.148
3,5,-80.361111,25.699444,209
1,6,-80.171667,26.36,675
1,7,-80.144167,26.562778,173
1,8,-80.109722,26.760556,76
3,9,-80.317222,25.679444,311
3,10,-80.266667,25.747222,115
4,15,-80.123056,25.854167,510
4,16,-80.198611,26.248889,401
1,18,-80.088889,26.45,380
1,20,-80.058611,26.651944,216
4,22,-80.210833,25.848611,138
4,23,-80.128889,26.085833,844
4,25,-80.288889,25.845556,55
1,26,-80.201111,26.630833,251
4,27,-80.204722,25.93,590
3,38,-80.360833,25.596667,255
3,39,-80.333889,25.649444,584
4,30,-80.415,26.086389,207
4,31,-80.175833,26.121944,128
1,37,-80.681389,26.686667,213
4,40,-80.364444,25.828333,156
4,42,-80.286944,25.920556,147
4,43,-80.168056,26.024722,333
3,46,-80.129167,25.793611,2694
3,47,-80.238611,25.811389,121
1,49,-80.051667,26.711944,381
4,50,-80.160556,25.908611,187
4,52,-80.26,26.121667,456
4,53,-80.105556,26.136389,501
3,54,-80.383333,25.653056,81
4,55,-80.249444,26.268333,314
3,56,-80.294722,25.703889,184
3,57,-80.315,25.808333.21
3,58,-80.265278,25.788333,267
4,60,-80.25,25.891667,205
4,61,-80.090833,26.230278,147
4,64,-80.211667,26.0175,595
```

FIG. 7


Clone by CUST & MFG Mismatch
January 1999
490 to 2,000 (20)
430 to 490 (15)
370 to 430 (15)
290 to 370 (15)
160 to 290 (15)
40 to 160 (15)

7/14 FIG. 8

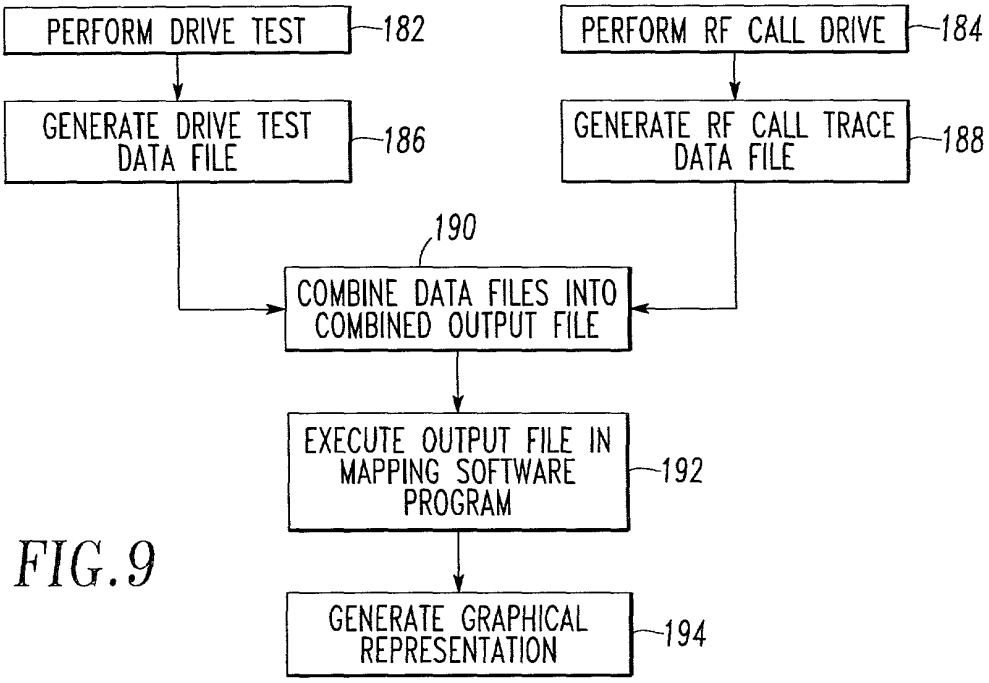


FIG.9

FIG.11B

```
ER,RBER,FER,BQ,TD,FREQ,TIME,MS,PRINT
DEV,FVC,RVC,TDRVC,FVC,RVC,RVC,RVC,RVC,RVC,ERR,ALIG

28.0069725,9412580201,T017C,MDVC-
15,0,1,0,2,0
28.0069725,9412580201,T017C,MDVC-
15,0,1,0,2,0
28.0069856,9412580201,T017C,MDVC-
15,0,2,0,2,1
28.0069856,9412580201,T017C,MDVC-
15,0,2,0,2,1
28.0070392,9412580201,T005B,MDVC-
2,0,4,0,2,1
28.0072014,9412580201,T005B,MDVC-
7,0,4,0,2,1
28.0072014,9412580201,T005B,MDVC-
7,0,4,0,2,1
28.0073900,9412580201,T005B,MDVC-
8,0,3,0,2,1
28.0073900,9412580201,T005B,MDVC-
8,0,3,0,2,1
28.0075761,9412580201,T005B,MDVC-
7,0,5,0,2,1
28.0075761,9412580201,T005B,MDVC-
7,0,5,0,2,1
592,9412580102,T005B
```

09/544,803 - 04/06/04

MOBILE TELEPHONE CELL TRAFFIC RECORDING
DIGITAL SIGNAL STRENGTH MEASURMENTS

MSNB	CELL	DEV	SSFVC	SSRVC
9412580201	T017C	MDVC-1060	23	20

SSSTDRVC	BERFVC	BERRVC	RBERRVC	FERRVC
6	3	2	2	0

BQRVC	TDRVC	FREQERR	TIMEALIGN	MSPOW
6	3	1	0	2

NCELL	NSSFFMC	MEASCHAN	VIND
T017A	5	1260	Y
T017B	23	1272	Y
T006B	17	1300	Y
T016B	13	1305	Y
T004A	29	1251	Y
T005B	33	1302	Y
T005A	23	1290	Y
T018A	21	1294	Y
T154B	21	1303	Y

TIMW	PRINTIND	FCODE
11:08:27	0	

END

MOBILE TELEPHONE CELL TRAFFIC RECORDING CANDIDATE LIST FOR HANDOFF

MSNB	CELL	TIME	FCODE	URGENCY
9412580201	T017C	11:08:28		0

CANDCELL	CELLTYPE	NTYPE	RATING
T005B	0	STD	0

END

FIG.10

XTEL LOG FILE

DATE,TIME,LONGITUDE,LATITUDE,ALT,SPEED,HEADING,DPS_MODE,PHONE_TASK,TASK_DESC,CHAN,RSSI,MODTYPE,SLOT,CHANTYPE,SAT,DVCC,POWER,BER,BER_CODE,SBI,TA,CELL1.DISTANCE1,CELL2,DISTANCE2,CELL3,DISTANCE3,LOWER_CTOA,UPPER_CTOA,COCHA_RSSI,MARKER,CHAN_GRP,EVENT,EVINFO,BAND,LISTTYPE,LISTCT,CHAN1,RSSI1,CHAN2,RSSI2,CHAN3,RSSI3,CHAN4,RSSI4,CHAN5,RSSI5,CHAN6,RSSI6,CHAN7,RSSI7,CHAN8,RSSI8,CHAN9,RSSI9,CHAN10,RSSI10,CHAN11,RSSI11,CHAN12,RSSI12,CHAN13,RSSI13,CHAN14,RSSI14,CHAN15,RSSI15,CHAN16,RSSI16,CHAN17,RSSI17,CHAN18,RSSI18,CHAN19,RSSI19,CHAN20,RSSI20,CHAN21,RSSI21,CHAN22,RSSI22,CHAN23,RSSI23,CHAN24,RSSI24,CHAN25,RSSI25,REVISION
7/30/99,11:08:27,-
82.3321883,27.9813839,9,40.3,86.9,G8,5,Conversation,1218,-
93,D,3,V,3,5,2,0.87,3,0,0,,,,,,,14,15,-100,0,8,,,1,Neig,9,1284,-
89,1302,-93,1300,-103,1255,-107,1317,-109,1303,-109,1314,-111,1305,-
111,1315,-
113,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,4
7/30/99,10:52:47,-
82.3321883,27.9813839,9,40.3,86.9,G8,5,Conversation,1218,-
93,D,3,V,3,5,2,0.84,3,0,0,,,,,,,14,15,-100,0,8,,,1,Neig,9,1284-
89,1302,-93,1300,-103,1303,-107,1255,-109,1314,-111,1317,-111,1305,-
111,1315,-
113,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,4
7/30/99,10:52:48,-
82.33219553,27.9813947,10,43.1,,87.0,G8,5,Conversation,1218,-
93,D,3,V,3,5,2,0.84,3,0,0,,,,,,,-10,38,-137,0,8,,,1,Neig,9,1284-
89,1302,-93,1300,-103,1303,-107,1255,-109,1314,-111,1317,-111,1305,-
111,1315,-
113,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,4
7/30/99,10:52:48,-
82.3319553,27.9813947,10,43.1,87.0,G8,5,Conversation,1218,-
95,D,3,V,3,5,2,0.84,3,0,0,,,,,,,-10,38,-137,0,8,,,1,Neig,9,1284-
83,1302,-93,1300,-101,1303,-105,1255,-109,1305,-111,1314,-113,1315,-
113,1317,-
113,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,4
7/30/99,10:52:49,-
82.3317164,27.9814044,10,44.7,87.2,G8,5,Conversation,1218,-
95,D,3,V,3,5,2,0.99,3,0,0,,,,,,,-10,38,-137,0,8,,,1,Neig,9,1284-
83,1302,-93,1300,-101,1303,-105,1255,-109,1305,-111,1314,-113,1315,-
111,1317,-
113,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,4

FIG. 11A

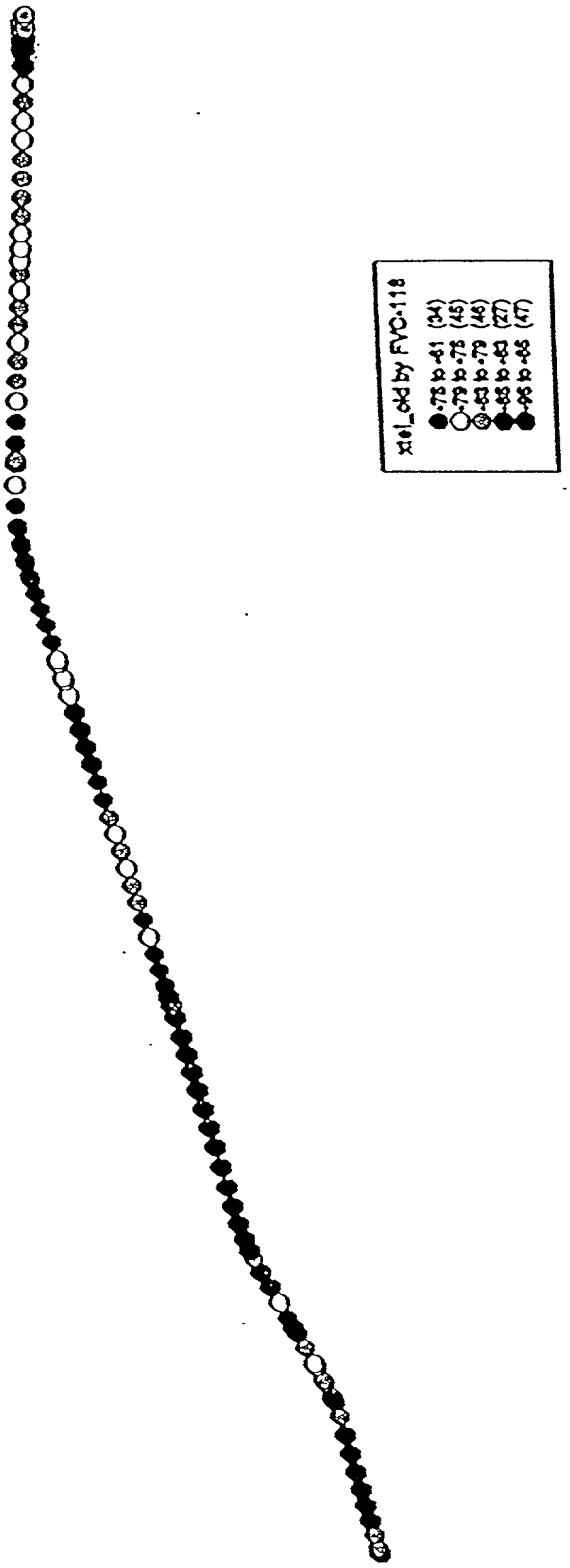

xol_old by FVC-118
0.75 0.41 (34)
0.75 0.75 (45)
0.83 0.79 (46)
0.83 0.83 (27)
0.88 0.88 (47)

FIG.12

COMARCO FILE

13:20:00.8,26.677,-81.567
12:20:01.2,25.230,-81.456
.....
.....
.....
13.21.00.3,28.655,-81.2128

FIG. 13A

Time,Long,Lat,CellNo,SS,
12:41:29,28,6559300,-18.205792000,1353,-124
12:41:29,28,6559300,-18.205792000,201,-106
12:41:29,28,6559300,-18.205792000,32,-106
12:41:29,28,6559300,-18.205792000,321,-76
12:41:29,28,6559300,-18.205792000,323,-66
12:41:29,28,6559300,-18.205792000,831,-100
12:41:30,28,6559260,-18.205580000,323,-66
12:41:31,28,6559170,-18.205380000,321,-75
12:41:31,28,6559170,-18.205380000,321,-75
12:41:31,28,6559170,-18.205380000,323,-64
12:41:32,28,6559080,-18.205198000,323,-63
12:41:33,28,6558950,-18.204922000,321,-73
12:41:33,28,6558950,-18.204922000,323,-62
12:41:34,28,6558900,-18.204769000,321,-73
12:41:34,28,6558900,-18.204769000,321,-73
12:41:34,28,6558900,-18.204769000,322,-98
12:41:34,28,6558900,-18.204769000,323,-61
12:41:35,28,6558900,-18.204577000,1353,-124
12:41:35,28,6558900,-18.204577000,201,-105
12:41:35,28,6558900,-18.204577000,202,-106
12:41:35,28,6558900,-18.204577000,32,-105
12:41:35,28,6558900,-18.204577000,323,-63
12:41:35,28,6558900,-18.204577000,831,-99
12:41:37,28,6558970,-18.204219000,321,-73
12:41:37,28,6558970,-18.204219000,323,-67
12:41:38,28,6559000,-18.204044000,321,-74
12:41:38,28,6559000,-18.204044000,323,-67
12:41:38,28,6559000,-18.204044000,321,-74
12:41:38,28,6559000,-18.204044000,323,-67
12:41:40,28,6559020,-18.203683000,1353,-122
12:41:40,28,6559020,-18.203683000,202,-104
12:41:40,28,6559020,-18.203683000,32,-105
12:41:40,28,6559020,-18.203683000,321,-73
12:41:40,28,6559020,-18.203683000,322,-96
12:41:40,28,6559020,-18.203683000,323,-67
12:41:41,28,6559070,-18.203457000,321,-72
12:41:41,28,6559070,-18.203457000,323,-66
12:41:42,28,6559100,-18.203125000,321,-71
12:41:42,28,6559100,-18.203125000,323,-66

FIG. 13B

```
v- - - - - - - - - - - - - - - - - - Record #      1: - - - - - - - - - - - - - - - - - -v
05/10/99 13:22:05 ALM INF  4103  7 32          G        TC    457
                Call Monitor: Call Record has been Written in RAM disk
                Ph#:(407)9223002 Call clear by MS - mobile clear
v- - - - - - - - - - - - - - - - - - Record #      2: - - - - - - - - - - - - - - - - - -v
05/10/99 13:22:04 ALM INF  4113  7 32          G        TC    457
                Call Monitor: Call RSSI value
                (407)9223002 cell 323 rrssi -77 attn 4 snr 40
v- - - - - - - - - - - - - - - - - - Record #      3: - - - - - - - - - - - - - - - - - -v
05/10/99 13:22:04 ALM INF  4117  7 32          G        SRC
                Call Monitor: Adj. cell RSSI values from Scanning Rcvr.
                (407)9223002 Cell_id RSSI:/323 / -73
v- - - - - - - - - - - - - - - - - - Record #    264: - - - - - - - - - - - - - - - - - -v
05/10/99 13:21:00 ALM INF  4117  7 20          A        SRC
                Call Monitor: Adj. cell RSSI values from Scanning Rcvr.
                (407)9223002 Cell_id RSSI:/201 / -98
v- - - - - - - - - - - - - - - - - - Record #    265: - - - - - - - - - - - - - - - - - -v
05/10/99 13:21:00 ALM INF  4117  7 32          B        SRC
                Call Monitor: Adj. cell RSSI values from Scanning Rcvr.
                (407)9223002 Cell_id RSSI:/322 / -103
v- - - - - - - - - - - - - - - - - - Record #    266: - - - - - - - - - - - - - - - - - -v
05/10/99 13:21:00 ALM INF  4117  7 83          A        SRC
                Call Monitor: Adj. cell RSSI values from Scanning Rcvr.
                (407)9223002 Cell_id RSSI:/861 / -96
v- - - - - - - - - - - - - - - - - - Record #    267: - - - - - - - - - - - - - - - - - -v
05/10/99 13:21:00 ALM INF  4117  7 32          A        SRC
                Call Monitor: Adj. cell RSSI values from Scanning Rcvr.
                (407)9223002 Cell_id RSSI:/321 / -78
v- - - - - - - - - - - - - - - - - - Record #    268: - - - - - - - - - - - - - - - - - -v
05/10/99 13:21:00 ALM INF  4117  7 135         G        SRC
                Call Monitor: Adj. cell RSSI values from Scanning Rcvr.
                (407)9223002 Cell_id RSSI:/1353 / -113
v- - - - - - - - - - - - - - - - - - Record #    269: - - - - - - - - - - - - - - - - - -v
05/10/99 13:21:00 ALM INF  4117  7 20          B        SRC
                Call Monitor: Adj. cell RSSI values from Scanning Rcvr.
                (407)9223002 Cell_id RSSI:/302 / -100
v- - - - - - - - - - - - - - - - - - Record #    270: - - - - - - - - - - - - - - - - - -v
05/10/99 13:21:00 ALM INF  4113  7 32          G        TC    457
                Call Monitor: Call RSSI value
                (407)9223002 cell 323 rrssi -72 attn 4 snr 40
v- - - - - - - - - - - - - - - - - - Record #    271: - - - - - - - - - - - - - - - - - -v
05/10/99 13:21:00 ALM INF  4117  7 32          G        SRC
                Call Monitor: Adj. cell RSSI values from Scanning Rcvr.
                (407)9223002 Cell_id RSSI:/323 / -71
v- - - - - - - - - - - - - - - - - - Record #    272: - - - - - - - - - - - - - - - - - -v
05/10/99 13:21:00 ALM INF  4117  7 3           B        SRC
                Call Monitor: Adj. cell RSSI values from Scanning Rcvr.
                (407)9223002 Cell_id RSSI:/32 / -115
```

FIG. 14

US 6,356,760 B1

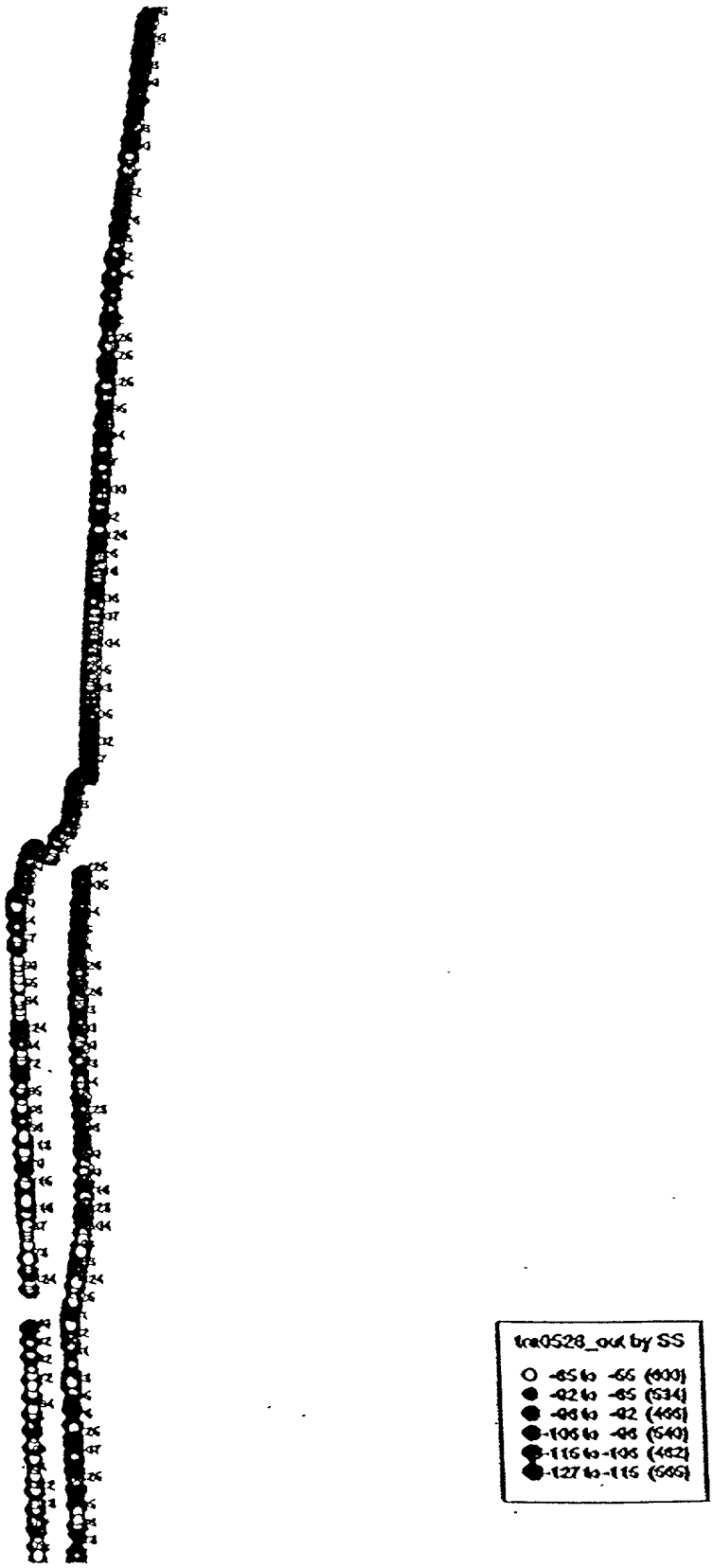

tca0528_out by SS
-85 to -66 (600)
-92 to -85 (534)
-98 to -92 (466)
-106 to -98 (540)
-116 to -106 (482)
-127 to -116 (566)

FIG.15